

P Armoracia rusticana

Common Name(s)

Horseradish

How Used

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Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	2-BUTYL-ISOTHIOCYANATE	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	3-(METHYLTHIO)-PROPYL-ISOTHIOCYANATE	Root	--	--	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	3-BENZYLISOTHIOCYANATE	Root	--	--	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
1	3-BUTENYL-ISOTHIOCYANATE	Root	--	--	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
0	3-O-(2-O-(BETA-D-XYLOPYRANOSYL)-BETA-D-GALACTOPYRANOSYL)-FLAVONE	Leaf	6	20	
0	3-O-(2-O-(BETA-D-XYLOPYRANOSYL)-BETA-D-GALACTOPYRANOSYL)-QUERCETIN	Leaf	1	4	
0	3-O-(BETA-D-GALACTOPYRANOSYL)-KAEMPFEROL	Leaf	--	--	
0	3-O-(BETA-D-GALACTOPYRANOSYL)-QUERCETIN	Leaf	--	--	
0	3-O-BETA-D-GLUCOSYL-BETA-D-KAEMPFEROL-XYLOSIDE	Leaf	--	--	Abstract (See species file)
0	3-O-BETA-D-GLUCOSYL-BETA-D-QUERCETIN-XYLOSIDE	Leaf	--	--	Abstract (See species file)

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	3-O-BETA-D-KAEMPFEROL-GLUCOSIDE	Leaf	--	--		Abstract (See species file)
0	3-O-BETA-D-QUERCETIN-GLUCOSIDE	Leaf	--	--		Abstract (See species file)
1	4-PENTENYL-ISOTHIOCYANATE	Root	--	--		Wealth of India.
32	AESCULETIN	Plant	--	--		Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
0	ALLOXURBASEN	Root	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
16	ALLYL-ISOTHIOCYANATE	Root	400	2592		
7	ALLYL-SULFIDE	Root	--	--		Wealth of India.
5	ALUMINUM	Root	4	30	-0.2963835040806538	ACTA AGRIC SCAND SUPPL 22: 1980

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
1	AMYLASE	Root	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
14	ARGININE	Root	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
2	ARSENIC	Root	0.01	0.04	-0.20577574015712302	ACTA AGRIC SCAND SUPPL 22: 1980
112	ASCORBIC-ACID	Leaf	2440	4560	-0.020810203280628586	
112	ASCORBIC-ACID	Plant	1220	18200	3.6789306859570874	
112	ASCORBIC-ACID	Root	1800	10000	5.070471286124204	
0	ASH	Plant	200000	200000	1.4269853561791084	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	ASH	Root	10620	59000	-0.2444004558296572	
2	ASPARAGINE	Root	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
53	BETA-CAROTENE	Root	27	150	0.5227136521125912	
47	BETA-SITOSTEROL	Root	--	710	-0.25867676228885333	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
0	BIOSIDE	Leaf	--	--		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
4	BORON	Root	6	27	0.10907004695750487	ACTA AGRIC SCAND SUPPL 22: 1980
0	BROMINE	Root	5	19	1.3171281598976525	ACTA AGRIC SCAND SUPPL 22: 1980

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	BUTYLISOTHIOCYANATE	Plant	188	2867		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
3	CADMIUM	Root	0.08	0.5	-0.36034786075591185	ACTA AGRIC SCAND SUPPL 22: 1980
102	CAFFEIC-ACID	Plant	--	--		Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
28	CALCIUM	Root	1800	10000	0.28443978784453666	
2	CAMPESTEROL	Root	--	200	1.2834996430471919	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
0 CARBOHYDRATES	Root	155000	783000	-0.6037053926433201	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
7 CHLORINE	Root	185	745	0.3641382774206427	Wealth of India.
24 CHROMIUM	Root	0.6	3.5	0.13765284526356406	
2 COBALT	Root	--	--		
12 COPPER	Root	1	9	-0.30116857246091955	
0 D-2-BUTYLISOTHIOCYANATE	Seed	--	--		
0 EO	Plant	200	3050	-0.5083339974706322	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0 EO	Root	500	2160	-0.5530506754837335	
1 ETHYL-ISOTHIOCYANATE	Root	--	--		Wealth of India.
0 FAT	Root	5040	28000	0.1707507790690317	
15 FIBER	Root	14000	94000	0.130764747590634	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	FIBER(CRUDE)	Root	--	122000	0.3171910897303088	
0	FIBER(DIETARY)	Root	--	430000	0.34479309207066455	
0	FLUORINE	Root	--	0.1	-0.8144046057224281	ACTA AGRIC SCAND SUPPL 22: 1980
8	FRUCTOSE	Root	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
8	GENTISIC-ACID	Root	15	15		
0	GLUCOBERTEROIN	Plant	--	--		Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1 GLUCOBRASSICANAPIN	Plant	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0 GLUCOCAPPARIN	Plant	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0 GLUCOCHEIROLIN	Plant	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	GLUCOCOCHLEARIN	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	GLUCOCONRINGIIN	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	GLUCOIBERIN	Plant	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.

0	GLUCOIBERVERIN	Plant	--	--	Reference Citation
0	GLUCOLEPIDIN	Plant	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
1	GLUCONAPIN	Plant	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	GLUCONASTURTIIN	Plant	--	--	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
0	GLUCOPUTRANJVIN	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
7	GLUCOSE	Root	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	GLUCOSINOLATES	Root	--	--	

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0 GLUCOTROPAEOLIN	Plant	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0 HAEMATIN	Root	13	16	Wealth of India.
0 HYDROXYCINNAMIC-ACID	Plant	--	--	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
0 INVERSTASE	Root	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
6 IRON	Root	1.4	8	-0.4300308811451584

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	ISOPROPYLISOTHIOCYANATE	Plant	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	ISOTHIOCYANATES	Root	12200	20400		Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
75	KAEMPFEROL	Leaf	--	--		Abstract (See species file)
75	KAEMPFEROL	Root	--	6		
0	KAEMPFEROL-3-O-BETA-D-XYLOFURANOSIDE	Shoot	--	--		
0	KAEMPFEROL-3-O-BETA-D-XYLOFURANOSYL(1,2)-GALACTOPYRANOSIDE	Shoot	--	--		
0	KILOCALORIES	Seed	600	2370	-1.9478218965025125	Wealth of India.
0	LEAD	Root	0.02	0.15	-0.6572844818658716	ACTA AGRIC SCAND SUPPL 22: 1980

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60	LIMONENE	Plant	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	LIPASE	Root	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
65	MAGNESIUM	Root	1624	9020	3.436573672307347	
14	MANGANESE	Root	1.5	8.2	-0.44795773578567305	
1	MERCURY	Root	--	0.001	-0.508569995990937	ACTA AGRIC SCAND SUPPL 22: 1980
0	METHYL-ISOTHIOCYANATE	Root	--	--		Wealth of India.
2	MOLYBDENUM	Root	--	0.1	-0.46089530570591497	ACTA AGRIC SCAND SUPPL 22: 1980

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	MYROSIN	Root	--	--		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	MYROSINASE	Root	--	--		
39	NIACIN	Root	16	90	1.1523682511680913	
3	NICKEL	Root	0.2	1.2	-0.495065007546234	ACTA AGRIC SCAND SUPPL 22: 1980
0	NITROGEN	Root	8600	38461	1.3020990395574676	ACTA AGRIC SCAND SUPPL 22: 1980
13	P-HYDROXY-BENZOIC-ACID	Root	14	14		
24	PECTIN	Root	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	PEROXIDASE	Root	--	--		
0	PEROXIDASES	Root	350	1400		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	PHENYLETHYL-ISOTHIOCYANATE	Root	292	540	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
1	PHENYLPROPYL-ISOTHIOCYANATE	Root	--	--	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
0	PHOSPHATASE	Root	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
4	PHOSPHORUS	Root	1278	7100	0.6294359439199063
2	PHYTOSTEROLS	Root	--	910	0.014453690337214282 Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
14	POTASSIUM	Root	5400	30000	1.0413262881316638

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0	PROTEASE	Root	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	PROTEIN	Leaf	21000	28000	-1.8340320033979245	Wealth of India.
0	PROTEIN	Root	45000	250000	1.4776556490763388	
176	QUERCETIN	Leaf	--	--		Abstract (See species file)
3	RAPHANIN	Plant	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
15	RIBOFLAVIN	Root	4	20	3.485161664486578	
0	RUBIDIUM	Root	0.9	4.6	-1.1478999953405424	ACTA AGRIC SCAND SUPPL 22: 1980
4	RUTOSIDE	Leaf	--	--		
7	SALICYLATES	Root	1	2	-0.6930213679572391	
60	SELENIUM	Root	--	--		
4	SILICON	Root	0.4	2	-0.33371737669722845	

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9	SINAPIC-ACID	Plant	--	--		
0	SINAPIN	Seed	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
7	SINIGRIN	Root	--	3000		
1	SODIUM	Root	216	1200	0.045965512774069996	
5	STARCH	Root	39600	220000	-0.40048460622279153	
12	STIGMASTEROL	Root	--	--	-0.8132428087578462	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
0	SUGAR	Root	--	73000	0.26745753103716463	Wealth of India.
14	SULFUR	Root	1800	10000	2.1484129636070275	ACTA AGRIC SCAND SUPPL 22: 1980

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35	TANNIN	Plant	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
31	THIAMIN	Root	--	3	-0.32687193108858614	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
0	THIAMINE	Root	0.2	1	-0.665115009526749	
2	TRIFOLIN	Shoot	--	--		
0	UMECYANIN	Plant	--	--		
24	VANILLIC-ACID	Root	45	45	0.4683014551040585	
0	WATER	Root	--	820000	0.33220504138805035	
77	ZINC	Root	0.5	2.9	-0.9319328403212439	